Contrib. Western Botany
No. 1

(Reprint from Zoe, Vol. II, April, 1891.)

NEW PLANTS FROM ARIZONA, UTAH AND NEVADA.

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ASTRAGALUS MOENCOPPENSIS. Densely tufted from a much branched woody root; one foot high, branched, glabrous or slightly pubescent with scattered hairs, young leaves more pubescent; stipules scarious, small, broadly triangular, not free, generally with a tuft of white hairs at the tip; leaves 4 to 8 inches long, petiole half the length, generally grooved; leaflets about 5 pairs, linear or narrower, one inch or less long, acute, somewhat narrowed at the base; peduncles 8 to 12 inches long, racemose-spicate on the upper half, flowers spreading; bracts a line long, ovate or lanceolate, acuminate, hairy; pedicels half a line long; calyx very hairy with entangled white hairs, campanulate, about 2 lines long, equaling or slightly exceeding the subulate lobes; flowers purple, surpassing the calyx lobes by 1 to 2 lines; pods erect or even reflexed, barely equaling the calyx lobes, 3 lines long by 1½ wide, one-celled, obcompressed to such an extent that the cross-section is nearly linear, hoary, oblong-oval, acute, sessile, both sutures prominent, the ventral more so, scarcely sulcate ventrally, not at all dorsally.

Collected June 11, 1890, on limestone cliffs, at Willow Springs, near the Moencoppa, in northern Arizona.

ASTRAGALUS SOPHOROIDES. Perennial but flowering the first year, silvery silky all over even to the stipules, but the calyx with rather coarse pubescence, the hairs on the calyx inclined to be entangled and those on the pods shorter and entangled; plants 3 to 12 inches high, many stemmed, erect or ascending; stipules free from the petiole and connate, even to the top of the stem, scarious, large,

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upper part acuminate-triangular; leaves 3 to 4 inches long, the stout petiole being 1 to 1½ inches long; leaflets 4 to 7 pairs, oblong-linear or narrowly oblong, rounded at top and cuneate at base, 1 to 4 lines wide and 6 to 16 long; earliest peduncles very short, ½ to 1 inch long, spike 1 to 2 inches long, and so appearing sessile among the leaves as in *Sophora sericea*, later peduncles often 4 inches long and the spikes 3 inches in addition, latest peduncles as short as the earliest ones; bracts scarious, ovate or lanceolate, acuminate, as long as the calyx tube, hirsute; calyx campanulate, equaling the subulate teeth; flowers light yellow, keel sometimes purple tipped, 4 lines long, erect; pods erect, 4 lines long by 2 lines wide and less than 1 line thick, slightly exceeding the calyx and its lobes, hoary, the tip slightly incurved, elliptical, rounded at base and barely acute at tip, obcompressed, flattened at base, ventral suture prominent, neither suture incurved, one-celled, chartaceous; seeds several, large. The oldest leaves and stems are sometimes only pubescent.

Collected at Willow Springs and on the Moencoppa, northern Arizona, June 10, 1890.

FRASERA UTAHENSIS. Intermediate between *paniculata* and *albomarginata*. Upper stem leaves reduced to small bracts, lower opposite, 3 to 4 inches long and nearly 1 inch wide at the ovate clasping base, tapering gradually to a slender point; root leaves clustered, 1 inch wide at base and somewhat contracted and gradually tapering to a point, or lanceolate from a slightly contracted base and long acuminate, nearly 2 inches wide in this case, distinctly 3-nerved and indistinctly 7-nerved; stems 3 to 5 feet high, erect, widely branching (at right angles to the stem) toward the top, branches opposite and a foot or more long; whole plant glabrous; pedicels flexuous ½ to 1 inch long in flower and in fruit lengthening to 3 inches; all the flowers show a decided tendency to become erect by the curving of the lower pedicels; calyx lobes generally broadly ovate, acute or abruptly acuminate, whitish margined, 1½ to 2 lines long, enlarging somewhat in fruit; corolla yellowish green and purple spotted, lobes 4 lines long, oblong-obovate, obtuse, and with rather ragged margin; gland above the middle, much broader than long, with a prominent tooth in the middle, yellowish, glabrous on its face or only slightly hairy, fringed on the edge, base confluent into a pair of coronal crests which are bilamellate and dissected into flattened subulate segments which terminate in long

twisted white hairs, the lamellæ unite below into the two glabrous tubes which extend nearly to the base of the lobes; filaments purple at very base, separate, and surrounded at base by scanty hairs; style short and subulate; stigma very small; pod lanceolate or oblong-ovate, acuminate, flattened but doubly convex; seeds elongated-oblong, marginless.

Collected by me June 19, 1890, on the Buckskin Mountains (Kaiba Plateau), on the southern edge of Utah. It grows in the valleys also and in poor soil, in very dry situations. The descriptions of allied species in the Synoptical Flora are very incomplete and unsatisfactory.

CERCOCARPUS ARIZONICUS. Low, intricately branched, spinescent, 1 to 2 feet high; whole plant short-woolly except the old stems which are smooth and very light gray; leaves in fascicles of 6 to 10, narrowly oblong and entire, revolute and so broadly linear, very thick, obtuse, 3 to 6 lines long and 1 line wide or more; flowers 4 lines long and the limb 3 lines wide; seed 2 lines long, covered with very long yellowish hairs; tail 1 inch long and very long-hairy.

Collected June 11, 1890, at Willow Springs, on the cliffs.

Compared with *C. ledifolius* var. *intricatus* Jones (*C. intricatus* Watson), the flower is twice as large and the tail not much over half as long, stouter and the hairs double the length of the var. The leaves are several times thicker, shorter; the dense pubescence stands straight out from the leaf and is woolly, not at all silky nor appressed; the stems are weakly spinescent, while the var. is not at all spinescent. I have long ago shown that Watson's *C. intricatus* is only a starved form of *ledifolius*, and all sorts of transitional forms are to be found in the Wasatch. Compared with *C. breviflorus* Gray, this plant has narrow and not at all spatulate leaves, the base if anything being a little broader than the tip, leaves woolly instead of silky-puberulent, tube of the flower much longer, solitary, other differences of fruit not determinable.

CYMOPTERUS MEGACEPHALUS. Acaulescent from a thick fusiform root the top of which is shaggy with dead petioles; leaves many, flat on the ground, petioles 1 to 4 inches long (an inch or so long above the ground), leaves twice to thrice pinnatifid, triangular or ovate in outline, blade 3 to 6 inches long, segments bluntly toothed or lobed, the teeth reminding one of the lobes of some species of Cheilanthes, leaves thick, glabrous but not glaucous; pedun-

cles about as long as the leaves and not elongating in fruit, flat on the ground; flowers very small, dirty white, in dense heads like the heads of mimosa flowers, ¾ inch broad in flower and 1½ to 2 inches broad in fruit, involucre none, top of the peduncle enlarged into a disk from which the innumerable flowers arise; fruit with generally thick spongy wings, almost orbicular to obovate, truncate at the top, 4 lines long and 3 wide, wings a little over a line broad, all three equally developed, oil tubes 8 or more on the commissure, and 4 to 7 in the intervals, fruit hairy at the top, and the triangular calyx lobes green and starlike on the top of the fruit.

June 10, 1890, on the mesas just south of the Little Colorado, northern Arizona, growing in gravel. This is to be compared only with *C. globosus* and *corrugatus*, but is very different from either in the leaves and fruit as well as the size.

LAPHAMIA GILENSIS. Shrubby at base, 6 to 10 inches high, glabrous; simple, striate stems tufted and erect; leaves distant, lower opposite, long petioled, petiole margined 1 inch long; blade ¾ inch long, ovate or broadly ovate and with a cuneate base, 3-nerved from the base, small, lowest entire or coarsely dentate, or three-lobed and coarsely dentate; upper leaves much reduced, alternate, always lobed or dentate and more or less glutinous; heads single, terminating the slender branches; involucral scales ovate or lanceolate, outer ones acute, all nerved and glandular; heads many flowered; rays yellow present or absent, about ¼ longer than the disk flowers; akenes with one slender upwardly toothed bristle; hairs on the sides of the akene thick and bidentate at the tip.

May 23, 1890, at Putnam's Ranch, near the Gila River, growing among rocks. This is allied to *L. lanceolata* Gray.

ERIOGONUM FLEXUM. Annual, intricately and widely branched from the base and upwards, 1 to 2 feet high and branches a foot or more long and horizontal; leaves fleshy, yellowish-green and glabrous except a few scattered hairs and some scurf; petioles glandular and hairy, 1 inch or less long; blade nearly round, 9 lines long, obtuse, cuneate at base; stem leaves generally in threes at the nodes, linear-oblanceolate, acute, lower 6 lines long, upper gradually reduced but never minute, glabrous except at base where there is a glandular and hairy pubescence; lower part of the stem and nodes glandular and sparsely hairy, otherwise glabrous; pedicels ascending from every node of the repeatedly dichotomous branches, 1 to 2

inches long, purplish, capillary bent at right angles above the middle; scales of the involucre separate nearly to the base, lanceolate or ovate-lanceolate, obtuse, 1 line long, hyaline margined, erect; flowers 5 to 10 on pedicels ½ a line long, ovate with a contracted base and the lobes connivent at tip, 1 line long, pubescent with very stiff short hairs, but scarcely glandular, sepals 1 line long and very narrowly triangular, three times as long as wide, golden yellow, the pubescence confined to the lower half, midrib prominent. The nearest congener is *E. salsuginosum.* The flowers are much the same, but the akene of *flexum* is brown, broadly ovate, very narrowly winged at the abruptly contracted summit, not at all winged in the middle, and slightly so at the base. The akene of *E. salsuginosum* is simply ovate, and winged throughout and conspicuously so at the base and broad apex, and is yellowish brown, they are the same size. *E. flexum* resembles *E. trichopodum* in habit. *E. salsuginosum* is a small, erect, closely branched annual, with some of the upper involucres long peduncled, and the rest sessile.

Collected June 10, 1890, on the Moencoppa in northern Arizona. It grows on dry mud flats.

There are two plants which need characterizing, one of which has been known for ten years—two species of Stanleya. The first is a very conspicuous plant from the wide sandy valleys of western Nevada.

STANLEYA ELATA. 2 to 6 feet high, erect, short lived or biennial, branching toward the top, glabrous to the flowers, and often glaucous; leaves very thick and leathery, veiny, generally entire, but sometimes with a few small lobes at the base, 4 to 10 inches long, obtuse, oval or ovate generally cuneate at base and contracted into the margined petiole which is seldom over 2 inches long; upper leaves lanceolate, acute, on a half-inch petiole, entire and contracted at the base, lower leaves slightly and irregularly dentate, spikes simple or compound 1 to 2 feet long and very showy from the golden glabrous sepals which are half an inch long and enlarged into a blade 2 lines wide; petals about 4 lines long, light yellow and inconspicuous, claw broadening to the base and glabrous, blade 2 lines long and scarcely wider than the upper part of the claw, narrowly linear; stamens twice as long as the petals, anthers loosely coiled, filaments glabrous down to the middle then very woolly to the base, with short, broad and flat hairs, not enlarging much at base;

pods 3 to 4 inches long and filiform, about ½ a line wide, seeds linear. This magnificent plant is conspicuous for miles near Hawthorne, Nevada, standing up like a sentinel on the plains. It differs from *S. pinnatifida* in the large leathery leaves which are generally very broad and entire, in the broad yellow sepals, very narrow and small glabrous petals, woolly filaments, and very long and narrow pods and linear seeds.

This was first collected by me in 1882, near Hawthorne.

Stanleya pinnatifida has greenish, linear, inconspicuous sepals, golden yellow petals, with a blade about 4 lines long and lanceolate but sometimes broadly linear and sometimes elliptical, the claw is subulate and quite broad at base and very woolly throughout, the stamens are woolly on the lower half and not much enlarged at base, anthers loosely coiled, the pods are shorter and about a line wide, seeds broader. It is a perennial from a woody root, and seldom is strictly erect.

STANLEYA ALBESCENS. Biennial, erect, branching from the base, 1 to 3 feet high; leaves entire or lyrate-pinnatifid toward the base, lanceolate to ovate, upper ones hastate and with a minute pair of leaflets on the short petiole, often glaucous, thick and cabbage-like, lower ones 6 inches or less long by 2 inches or less wide, petiole 1 inch long in all but the upper leaves; spike sessile, rather dense, sepals linear and slightly widened toward the top, white with a green tip and slightly tinged with green, $\frac{3}{16}$ inch long, glabrous; petals $\frac{7}{16}$ inch long, light yellow or at first almost pure white, blade broadly oval ¼ inch long, slightly erose, obtuse and abruptly contracted into the claw which is very narrow at the top and only ½ a line wide at base, claw clabrous except the top where it is scantily woolly; stamens ⅝ inch long exclusive of the tightly coiled anther, with a few woolly hairs toward the base, only very slightly enlarged at base; pods 2 inches long, a line wide; seeds narrowly oblong, obtuse; pedicel ⅜ inch long and stipe ½ inch long. This differs from *S. pinnatifida* in the very narrow white sepals, broad whitish almost glabrous petals, almost glabrous filaments and tightly coiled anthers, and short pods, as well as being biennial.

June 10, 1890, on the Moencoppa in dry mud from freshets.

SALT LAKE CITY, April 9, 1891.